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Abstract

The broadcasting nature of wireless communication creates challenges in attaining secure communication. Different approaches have been implemented to increase security in wireless communication with physical layer security being affordable choices as it attains secure communication with the same throughput and easily integrated with higher level security measures. Different physical characteristics of wireless channels can be exploited to implement physical layer security and in our research channel attenuation between transmitter and receiver were used. To provide cost effective and secure wireless communication we used constant envelope chirped OFDM (CE-chirped OFDM) with its subcarriers dynamically arranged based on the wireless channel response between the transmitter and a legal receiver. The security is further increasing by assigning identification number for each transmitter–receiver pair and the identifications numbers are boost arrangement of the subcarriers and increase system security. Different simulations were conducted and the simulations shows increase of system security when wireless channel attenuation of CE chirped OFDM is used to secure the communication between transmitter and legal receiver with the same symbol error rate as convectional OFDM and chirped OFDM.

Keywords

Physical layer security; Channel response; Inverse fractional fourier transform (IFrFT); Fractional fourier transform (FrFT); Chirped OFDM; Constant envelope